Third Five-Year Review Report
for

Allied Plating, Inc
Superfund Site
Portland, Oregon

September 2008

Prepared by EPA Region 10, Seattle, Washington

Approved by:

9/30/2008

Daniel D. Opalski
Environmental Cleanup Office
EPA Region 10

Date

Allied Plating Third Five-Year Review Report
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Executive Summary

The Allied Plating, Inc., chrome plating facility operated in Northeast Portland from 1957 until 1984 when the company declared bankruptcy and ceased operations. Discharge of liquid wastes from the plating process was the main source of environmental contamination, with the most serious problem resulting from plating wastes discharged to a pond on site. The metals in the plating wastewater precipitated out, forming a layer of chemicals on the bottom of a surface impoundment (an artificial pond created when land filling cut off drainage.) The site was proposed for inclusion on the National Priorities List January 22, 1987, and was listed February 2, 1990.

EPA conducted a Remedial Investigation (RI) at the Allied Plating Superfund Site between January 1990 and April 1992. The RI determined that the contamination of the site was mainly limited to the layer of plating waste formed in the surface of the impoundment area. At the end of the RI, the site was evaluated for a potential Removal Action as part of the Superfund Accelerated Cleanup Model (SACM) Program. The site met the criteria for remediation by a Removal Action and between October 20, and November 10, 1992, the plating waste in the impoundment area was excavated and shipped off site for disposal.

A risk assessment conducted after the Removal was completed concluded that the Site no longer posed an unacceptable risk and supported the conclusion that no further action was warranted under CERCLA. A no further action Record of Decision that maintained existing Institutional Controls on use of shallow groundwater was signed in 1993. The site was deleted from the National Priorities List on November 11, 1994.

This is the third five year review for the Allied Plating Site (Site). This review concluded that the remedy remains protective of human health and the environment.

The current and reasonably anticipated future land use at and around the Site is industrial and/or commercial. The remediation goal for the Removal Action was to remediate the Site to industrial standards and the remedy was so successful that the residual risk at the site is at most slightly above residential Regional Screening Levels (RSL) [1] for the contaminants of potential concern. The only issues identified during the review were whether groundwater Institutional Controls remain necessary and whether Institutional Controls should be added to be ensure the Site use remains industrial, or alternatively whether the site qualifies for unlimited use and unrestricted exposure. The Region has

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1 Regional Screening Level (RSL) formerly Preliminary Remediation Goals are concentrations that correspond to 10-6 Risk and Hazard Quotient of 1. See http://www.epa.gov/region09/waste/sfund/prg/rsl-table.html.

decided to evaluate these questions further between now and the next five year review.

The **Human Exposure Environmental Indicator** Status for the Site remains "Under Control". Exposures that posed unacceptable risk were addressed by the removal action and there is an Institutional Control to prevent use of shallow groundwater for drinking.

The Groundwater Migration Environmental Indicator Status for the Site remains "Not Applicable". No contaminated groundwater migration was found at the site and conditions did not warrant groundwater remediation.

Cross Program Revitalization Measure Status: The Site has been considered "protective for people under current conditions" because the Institutional Controls had not been reviewed and verified. Now that the review has taken place, the site qualifies for a change in status to "Ready for Anticipated Use".

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: **Allied Plating, Inc.**		
EPA ID *(from WasteLAN)*: ORD009051442		
Region: 10	**State:Oregon**	**City/County: Portland, Multnomah**

SITE STATUS	
NPL status: Deleted	
Remediation status (choose all that apply): **Complete**	
Multiple OUs?* **NO**	**Construction completion date:** 6 / 29 / 1993
Has site been put into reuse? YES	

REVIEW STATUS	
Lead agency: G EPA G State G Tribe G Other Federal Agency **EPA**	
Author name: Kevin Rochlin	
Author title: Project Manager	**Author affiliation: EPA**
Review period:** 6/1/08 to 9/28/08	
Date(s) of site inspection: 7/6/2008	
Type of review: **Post-SARA Statutory**	
Review number: 3	
Triggering action: Five-Year Review Report	
Triggering action date *(from WasteLAN)*: 9 / 8/ 2003	
Due date *(five years after triggering action date)*: 9/8/08	

Issues:
The only issues identified during the review were whether groundwater Institutional Controls remain necessary and whether Institutional Controls should be added to be ensure the Site use remains industrial, or alternatively whether the site qualifies for unlimited use and unrestricted exposure. These issues were determined not likely to affect protectiveness since the site already falls within the acceptable risk range but the Region has decided to evaluate these questions further between now and the next five year review.

Recommendations and Follow-up Actions:
There are no recommendations or follow-up actions which affect protectiveness. However,the Region has decided to do the following between now and the next five year review
Re-evaluate the risk assessment and site conditions further.
Determine whether groundwater Institutional Controls remain necessary and whether Institutional Controls should be added to be ensure Site use remains industrial, or alternatively whether the site qualifies for unlimited use and unrestricted exposure.
Document whatever decision is made in an Explanation of Significant Differences.

* ["OU" refers to operable unit.]

I. Introduction

A. Purpose of the Five-Year Review

Region 10 of the Environmental Protection Agency (EPA) has conducted a third Five-Year Review of the Allied Plating, Inc (Allied Plating or Site), and prepared this report consistent with the requirements of Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended in Section 300.430(f)(4)(ii) of the National Contingency Plan (NCP).

The United States Environmental Protection Agency - Region 10 (EPA) is preparing this third five-year review pursuant to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) § 121 and the National Contingency Plan (NCP). CERCLA § 121 states: If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews. EPA has interpreted this requirement further in the National Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii), which states: If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The record of decision concluded that some of the remedial actions at the Site resulted in contaminants remaining on the site above levels allowing unlimited use. Thus, a review is required by statute. The purpose of this third Five-Year Review is to determine whether the remedy at the site is protective of human health and the environment. Methods, findings, and conclusions of this review are documented in this report.

This third Five-Year Review was conducted pursuant to the Office of Solid Waste and Emergency Response Directives 9355.7-03B-P.

The United States Environmental Protection Agency (EPA) Region 10 conducted this Five-Year Review of the remedial actions implemented at the Allied Plating Site in Portland Oregon. This report documents the results of the review. The review took place between June 2008 and September 2008. It was conducted by the EPA site manager for the site. The current EPA site manager has been managing the site since 1990.

The Allied Plating Superfund Site was remediated by a Removal Action (Removal) in 1992. A risk assessment conducted after the Removal was completed concluded that the site did not pose an unacceptable risk under an industrial scenario. A no further action Record of Decision was signed in 1993. The site was deleted from the National Priorities List on November 11, 1994. Five years have elapsed since the last 5-Year Review thus triggering this Five-Year Review.

II. Site History, Location and Description

A. Location, Description, and Physical Site Characteristics

The Allied Plating site is located at 8135 Martin Luther King, Jr. (MLK) Boulevard in an industrial and commercial district of northeastern Portland, Multnomah County, Oregon (Figure 1). It is approximately 1,000 feet north of the intersection of MLK Boulevard and N.E. Columbia Boulevard, and 1,000 feet south of the Columbia Slough (Slough), a local drainage channel that merges with the Willamette River and then the Columbia River. The site operated as a chrome plating company from 1957 until 1984. Wastewater from plating operations was discharged to a swale draining to the Columbia Slough. Filling activities between the property and the slough cut off this drainage. The company continued its discharge which formed a surface impoundment on the property

The site covers approximately 12 acres, and for the site investigation and cleanup was divided into three areas based on their historical usage (Figure 2). The southernmost section contained the administrative and storage building for the former Allied Plating business. This area was across the street from the location where plating activities occurred, and was not considered to be contaminated from operations. The "layout area" contained the building housing the former plating operation and a storage yard. This area is presently occupied by Basic Fire Protection, a company making and installing fire prevention sprinkler systems. The "impoundment area" is the northern, low lying area of the property. This is the area where plating wastewater ponded as described below. As of this review the area continues to be used for storage of heavy equipment and other large items.

Prior to 1969, the property drained overland to the north, into a swale that led directly into the Slough. Wastewater from the plating facility was discharged to this natural drainage. In 1969, extensive backfilling with dirt and construction debris north of the site partially covered the swale, cut off the natural drainage, and left the northern end of the site 20 to 30 feet lower than the surrounding off-site areas. Wastewater discharged from the facility began to collect in this low lying area (the impoundment area) forming a 1.5 acre pond. Surface runoff from the Allied Plating site and surface water draining from the adjacent area contributed to the pond.

A combined sewer overflow (CSO) pipeline runs northerly under the impoundment area to an outfall in the Slough. The CSO line is a 36-inch square pipe constructed in 1928. During the 1992 Removal, a remote control video camera was used to inspect the pipeline. The pipeline was still in good condition, and not acting as a conduit for drainage from the pond.

B. Adjacent Land Uses

The site is located in an area of light industry.

C. Groundwater

A single unconfined aquifer, the Troutdale aquifer, was identified beneath the site. The aquifer was located 10 feet below ground surface in the impoundment area (equating to 10 feet above mean sea level.) The predominant groundwater flow direction was northwest.

A localized shallow perched groundwater aquifer was found in the vicinity of the impoundment area. This zone was located 5 feet below the surface (equating to 15 feet above mean sea level.)

D. Site History and Activities Leading to Contamination

Available data indicate that prior to 1947, the site was vacant land most likely utilized as pasture. In 1947, the site was leased for use as a wrecking yard. In 1957, the building was leased by Mr. Ernest Stierly as the site for the Allied Plating, Inc., chrome plating facility which operated from that year until 1984 when the company declared bankruptcy and ceased operations.

Prior to 1969, wastewater from the facility was discharged to a swale leading to the Columbia Slough. After 1969, backfilling between the site and the slough cut off property drainage. The liquid waste discharged from the plating process continued, forming a surface impoundment (artificial pond) on the site. The metals in the plating wastewater precipitated out, forming a layer of plating waste on the bottom of the impoundment.

In 1978, as a result of the discharge of wastewater to the pond, Oregon Department of Environmental Quality (ODEQ) required a compliance schedule for the installation of an on site wastewater treatment system.

In 1980, ODEQ required the facility to get an Oregon Water Pollution Control Facility (WPCF) permit, and as a result of the wastewater discharge, EPA required Allied Plating to submit a Resource Conservation and Recovery Act (RCRA) Part A (hazardous waste permit) application. In 1981, the facility received interim status as a treatment, storage and disposal facility under RCRA,

and in 1982 a WPCF permit was issued.

Mr. Stierly contracted with Sweet-Edward & Associates to install three groundwater monitoring wells. These wells were required under Allied Plating's RCRA Part A interim status. After Allied Plating ceased operations in 1984, the company did not conduct any additional groundwater monitoring or sampling, and the wastewater treatment system required by ODEQ was never installed. After the company stopped discharging liquid waste, the pond receded leaving a dry area covered with plating waste.

In September 1984, the U.S. EPA and ODEQ jointly requested closure and post closure plans from Mr. Stanley Hodes (the current site owner) as part of a requirement of a RCRA Part B permit.

In January, 1985, the Oregon Department of Transportation (ODOT) was informed that the pond encroached on the right-of-way of State Highway 99E (MLK Boulevard) and that ODOT shared the responsibility for site cleanup. Riedel Environmental Services (Riedel) was hired by the ODOT to prepare a closure plan for the site. Riedel installed 10 monitoring wells, hand-augered for soil samples at five locations, and collected two Slough sediment samples and five pond sediment samples. Results from the two studies showed that the groundwater in the vicinity of the site was contaminated with lead, nickel and chromium, and that there were high concentrations of metals in the impoundment area soils.

The next two years consisted of submissions of plans and other communications from the property owner and ODOT to the U.S. EPA and ODEQ, and reviews, comments and requests for further information from the agencies to ODOT and the property owner. In November 1986, when the closure plans were not accepted and actions under RCRA were not able to obtain site cleanup, EPA and ODEQ reached an agreement transferring program jurisdiction from RCRA to Superfund.

The site was proposed for inclusion on the National Priorities List January 22, 1987, and was listed February 2, 1990.

III. Response Actions

A. Remedial Investigation

In November 1990 EPA began field work for a Remedial Investigation (RI) of the site. The RI investigated contamination resulting from the direct discharge of wastewater or dumping of wastes, and the dispersal of these contaminants through the groundwater. The RI determined that site contamination was primarily limited to the impoundment area, and a Risk Assessment determined that the impoundment area was responsible for the majority of the risks associated with the site.

During pre-listing investigations both the shallow and Troutdale aquifers were found to be contaminated with nickel, chromium, and lead. However, results of the RI groundwater investigation showed that contamination related to site activities was no longer present. This was attributed to the fact that discharges from plating operations had ceased. The RI also found manganese in the groundwater. This was an area wide problem and so manganese was not addressed in risk management decisions made for the site.

Only one site well, which was located in the shallow perched groundwater aquifer, was found to exceed drinking water standards. The well exceeded the standard for nickel. Based on the limited area of contamination, lack of evidence of contaminant migration since operations ceased, and plans to remove the remaining contaminant source, EPA concluded that no groundwater cleanup or further monitoring was necessary. The MCL and MCLG for nickel were remanded on February 9, 1995. This means that while many water suppliers continue to monitor nickel levels in their water, there is currently no EPA legal limit on the amount of nickel in drinking water. (Note that at the time of this review, there is still no drinking water standard for nickel.) The risk assessment for the site concluded that it was unlikely that someone would drink water from this perched aquifer, and so it was not included in the future residential risk assessment for the site.

No action was required for the nearby laydown area, defined as the part of the property housing the plating building, parking lot, and back storage lot. The RI found this area to be well below the industrial remediation standards set for the site. For the residential scenario using conservative assumptions, hazard quotients were less than 1 and carcinogenic risk was less than $1x10^{-4}$.

The layer of plating waste covering the impoundment area was found to pose a potential health threat such that it met the criteria for CERCLA action. The rest of the site was within EPA's acceptable risk range using the industrial scenario. The site was evaluated for a potential Removal Action as part of the Superfund Accelerated Cleanup Model (SACM) Program. After consideration of this and other potential cleanup options, EPA determined that remediating the impoundment area as a pre-Record of Decision Removal Action was the preferred option.

The Removal Action took place between October 20, and November 10, 1992

B. Removal Action and Post Removal Risk Assessment

EPA signed an Action Memorandum in October 1992 and the impoundment area was remediated by a Removal Action (Removal) (see Figure 2 for the area covered by the Removal). The selected goal of the Removal was to clean the site so that the Hazard Index would be less than or equal to 1, and the excess cancer risk would be less than or equal to $1x10^{-4}$ for the industrial

scenario. EPA determined that the use of the industrial scenario was appropriate based on the fact that the site and vicinity historically were, and currently are used for industrial purposes, and would likely stay that way in the future. In addition, future use of the property for building residences would require filling the impoundment area to the grade of the layout area or the grade of MLK Boulevard (between 5 and 30 feet of fill). Thus, there would not be contact with any residual contamination.

During the Removal, the pond was drained, and approximately 900 tons of contaminated sediments and site soil were excavated, taken off-site and disposed of at Envirosafe Services, Inc., in Grandview, Idaho (a hazardous waste landfill.) The impoundment area (including the former pond) was then backfilled with one foot of quarry spalls (broken angular rock used to help stabilize muddy areas). The rock was leveled and graded with a bulldozer to leave a level, compacted surface. Approximately 5600 tons of rocks were placed as backfill. Following the Removal, the site monitoring wells were abandoned in accordance with Oregon Department of Environmental Quality regulations.

Following the completion of the Removal Action, EPA conducted a risk assessment on the contaminant concentrations remaining in the surface soils of the impoundment area prior to the addition of fill material. The analysis assumed a lifetime exposure to the remaining residual contaminant concentrations. Under the industrial scenario, the impoundment area posed a risk of $8x10^{-6}$ and a Hazard Index of 0.35. For the residential scenario, the impoundment area posed a risk of $8x10^{-5}$ and a Hazard Index of 2.5. Those estimates were considered extremely conservative and were calculated to provide a worst case scenario. The actual risk likely would be much lower based on the facts that 1) the remaining contamination was then under one or more feet of rock, thus preventing direct exposure to it; and 2) the area fills with water, and is below the surrounding grade, and so future residential or industrial use would require additional backfilling, resulting in covering the residual contamination by an additional 5 or more feet of backfill. The 2008 site inspection noted that additional rock and fill have been added to this area.

Although shallow aquifer use was unlikely, following the Removal Action EPA had the site owner place a deed restriction on the property to prevent screening wells in or using the shallow aquifer for drinking water purposes, and to require testing of the deeper Troutdale aquifer beneath the site prior to use for drinking. A copy of the restriction placed on the deed is in the Administrative Record for the site. The deed restriction contains the following language:

> The undersigned as owners of said tracts agree to burden the above described real property with a restriction prohibiting the use of a well for drinking water unless the top of the screened interval is deeper than 20' below mean sea level, and the water from the well is tested to ensure that it meets drinking water standards before use.

C. Remedy Selection and Record of Decision

Following completion of the removal action, EPA issued a Proposed Plan and then a Record of Decision which selected No Further Action as the remedy at the Allied Plating site. No further action was justified because:

- the contaminated areas of the site were remediated by a Removal Action which took place from October 20, to November 10, 1992;

- during the Removal Action, all site contamination above EPA's selected health based cleanup levels was excavated and disposed of in the hazardous waste disposal facility, Envirosafe Services, Inc., in Grandview, Idaho;

- The Removal had remediated the site to concentrations well below the industrial cleanup standards that were applied. Additionally, although the remediation goal for the Removal was to remediate the site to industrial standards, the Removal left the site such that potential risks for the reasonable maximum exposure scenario for residential use are within or below EPA's acceptable risk range.

- As a precaution, the Deed Restriction placed on the site was cited as an Institutional Control that would remain and preclude use of formerly contaminated groundwater. The presence of this deed restriction serves to provide notice to future purchasers of the property that the property was subject to an EPA cleanup and the shallow aquifer should not be utilized.

IV. Remedy Implementation Status

No site activities have been conducted since the last review. The site had been deleted prior to the last review. Although the remediation goal for the Removal Action was to remediate the site to industrial standards, the residual risk at the site is barely above residential Regional Screening Levels for the contaminants of concern.

A. Institutional Controls:

As a precaution in the Record of Decision, the Deed Restriction on use of shallow groundwater placed on the site post-removal was cited as an Institutional Control that would remain and to protect against use of formerly contaminated groundwater. The objective of the IC was to ensure that wells would not be screened in the shallow aquifer zone and if any wells are established and screened in the deeper Troutdale aquifer the water would be tested to ensure it meets drinking water standards. Due to the limited nature of the perched

aquifer, the extent of the restriction was appropriately limited to the former Impoundment Area on the Site (Tracts H&L in Figure 3).

In 2008 a Title Search was conducted by an EPA contractor which confirmed that the Deed Restriction recorded in May, 1993 was recorded properly and remains on the property records. A copy of the Title Search is attached to this review. The search report identified two prior encumbrances (one for power poles/maintenance and the other for streets), but neither is such that they would compromise the functioning of this Institutional Control or the remedy. EPA also confirmed that the property and surrounding properties remain zoned for industrial or commercial use, consistent with the cleanup goals used to guide the removal action. Given the post-removal risk assessment results and elimination of the MCL for nickel in 1995 there is some question whether any restriction on use of the site remains necessary. See Figure 2 for a detail photo with site features and Figure 3 for property and institutional control boundaries from the title search.

V. Progress Since Last Review

No issues, recommendations or follow-up actions affecting protectiveness were identified in either of the previous five year reviews.

No CERCLA actions have taken place on the site since the last review.

VI. Third Five-Year Review Process

A. Activities

The third Five-Year Review was conducted between June and September 2008. The review consisted of a site inspection conducted on July 6, 2008, a Title Search to verify the Institutional Controls on the site, a zoning records review, and review of the Record of Decision and previous reviews. There has been no community interest for this site. Therefore there was no community interviews conducted. A newspaper notice will be placed in the Oregonian to announce the completion and availability of this review.

The laydown area has not been discussed in previous 5 year reviews. As part of this review, the data from this area was re-evaluated. Table 1 compares the highest concentrations found in the laydown area with Regional Screening Levels. These screening levels equate to a risk of 1x10-6 and a Hazard Quotient of 1. This comparison is extremely conservative as risk assessments rely on data for an entire area not just the highest values. As shown in Table 1, the only

potential COC which exceeded levels that would allow the contaminant to be eliminated from further evaluation was nickel, which had a hazard quotient of 1.2. The risk for the reasonable maximum exposure industrial scenario is well below 1x10-6 and a Hazard Quotient of 1.

B. Site Visit

EPA inspected the site on July 6, 2008. The site and surrounding properties are still used for industrial purposes. The former impoundment area is now used to store cranes, trucks, cars and heavy equipment parts.

The Removal remediated the site to industrial standards. The current filling activities have buried the former site surface under at least 5 to 10 feet of fill. Thus, there is no longer any direct exposure to the residual contamination.

As mentioned in Section IV, as part of this review a Title Search was conducted to confirm the presence of Institutional Controls and determine whether they had been recorded and would function properly.

VII. Technical Assessment

A. Question A: Is the remedy functioning as intended by the decision documents? Yes.

The site was remediated successfully during the Removal. Following the Removal (and prior to the Record of Decision), the deed restriction limiting groundwater use was placed on the property. The EPA remedy called for no further action. This remedy decision is still valid.

Institutional Controls were assessed as part of this review. As a precaution in the Record of Decision, the Deed Restriction placed on the site post-Removal was cited as an Institutional Control that would remain and preclude use of formerly contaminated groundwater. The presence of the Institutional Control required for this site was verified by a Title Search to ensure that the control remains in effect at the property and was properly recorded. This deed restriction serves to provide notice to future purchasers of the property that the property was subject to an EPA cleanup and the shallow aquifer should not be utilized.

The area subjected to the groundwater use restriction consists of two parcels (H & L) of the former Allied Plating property where the impoundment area and pond were located and the Removal took place. The nature and location of the site, availability of City water, and the limited nature of the shallow aquifer make use of the shallow aquifer very unlikely. This conclusion was also reached in the risk assessment for the site. The fill material at the site and the industrial/commercial zoning and nature of the area around the site seem

sufficient to preclude further disturbance of the site or potential exposure to any residual contamination, and the estimated risks even if exposure occurred are so that no additional controls appear warranted. In fact, this review raises the question whether the groundwater Institutional Control remains necessary.

Conclusion: The remedy is functioning as intended by the decision documents.

B. Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial objectives (RAOs) used at the time of remedy selection still valid?

There have been no changes in the physical conditions of or land use at or near the site that would affect the protectiveness of the remedy. As part of this review, EPA confirmed that the current land use remains industrial and surrounding land uses remain industrial/ commercial. EPA also determined that reasonably anticipated future land use at the site for the foreseeable future remains industrial or commercial. However, a review of the post-Removal risk assessment, and a comparison done for this review of the contaminant concentrations in the laydown area to residential Regional Screening Levels, raises the question of whether the Site warrants additional Institutional Controls or whether conditions at the site actually allow for unrestricted use of and unlimited exposure to at least the soils at the site. The exposure assumptions used in the risk assessment seem conservative such that risk was likely overestimated.

For the industrial scenario, the conservative risk assessments done before the ROD found the impoundment area post-removal and the laydown area without remediation to be in or below the 10^{-6} risk range and well below the Hazard Index of 1.

Using the residential scenario assuming contact with post-Removal residual site soil in the impoundment area risk was estimated to potentially be as high as 8×10^{-5}, and slightly above the Hazard Index of 2. Given that the area was then covered with 12 inches of rock and an additional 5 to 10 feet of fill, making contact virtually impossible, the residential risk exposure assumptions and risk estimates appear to be unduly conservative.

In the laydown area, the highest concentration of nickel exceeded the residential Regional Screening Levels, resulting in an estimated Hazard Quotient of about 1.2 (given the uncertainty in these numbers, the difference between hazard quotients of 1 and 1.2 is not significant.) The Hazard Quotient calculates non cancer risk from a single chemical (these combine to form the Hazard Index.) Its use here is appropriate to show that even the highest contaminant concentrations found are not significant. Using a reasonable maximum exposure scenario the risk would be considerably lower.

If Site conditions do allow for unrestricted use of and unlimited exposure, EPA should proceed to document the conclusion in an Explanation of Significant Differences explaining the change in exposure assumptions and remedial objectives used in making the remedy decisions. Alternatively, if after further evaluation EPA concludes site conditions and residual risks are such that they do not allow for unrestricted use and unlimited exposure, current EPA policy calls for addition of some form of Institutional Control to ensure Site use remains appropriately limited.

As to standards and/or toxicity values, the MCL and MCLG for nickel were remanded on February 9, 1995. This means that while many water suppliers continue to monitor nickel levels in their water, there is currently no EPA legal limit on the amount of nickel in drinking water. EPA had institutional controls placed on the site to prevent drinking contaminated water in the shallow aquifer, and to ensure that drinking the Troutdale aquifer was safe. During site discovery, elevated levels of lead, chromium and nickel were found in both the shallow and Troutdale aquifers. However, at the time of the remedial investigation, the only contaminant found above the MCL was nickel, which was found in the shallow aquifer. Because water in this shallow aquifer exceeded the nickel MCL, EPA placed a restriction on the property prohibiting its use. The area has city water, as well as a large aquifer flowing beneath the site (the Troutdale aquifer) making use of the shallow aquifer unlikely. The recharge to the shallow aquifer at the site is mainly street runoff from the adjacent Martin Luther King, Jr. Avenue. It is therefore highly unlikely that anyone would drink water from this aquifer.

Although RI sampling did not find contamination in the Troutdale aquifer, because this aquifer had been contaminated, EPA required the restriction on the deed calling for water sampling in the deep Troutdale aquifer before use. Because the area is industrial, and there is a potential for the aquifer to be contaminated from other sources, EPA believes that testing of the Troutdale aquifer before use is important. However, this should be done regardless, and not required based on previous contamination concentrations.

C. Question C: Has any information come to light that could question the protectiveness of this remedy?

There have been no changes in land use since the remedy was implemented. The area remains zoned and the site and surrounding areas are still used for industrial and/or commercial uses, and the remedy was so successful that the residual risk would be extremely low even in the unlikely event of residential use.

There are no new ecological risks that have come to light since remedy implementation, no natural disasters have impacted the remedy, and there is no additional information which raises questions about the remedy. Based on current information, no information calls into question the protectiveness of the remedy.

D. Technical Assessment Summary

According to the data reviewed and the site inspection, the remedy is functioning as intended by the decision documents. The current and reasonably anticipated future land use at and around the Site remains industrial and/or commercial. There have been no changes to the physical conditions of the site that would affect the protectiveness of the remedy.

The remediation goal for the Removal Action was to remediate the Site to industrial standards and the remedy was so successful that the residual risk at the site is at most slightly above residential Regional Screening Levels (RSL) [2] for the contaminants of potential concern.

There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

The only issues identified during the review were whether groundwater Institutional Controls remain necessary and whether Institutional Controls should be added to be ensure the Site use remains industrial, or alternatively whether the site qualifies for unlimited use and unrestricted exposure. These issues were determined not likely to affect protectiveness but the Region has decided to evaluate these questions further between now and the next five year review.

IX. Recommendations and Follow-up Actions

There are no recommendations or follow-up actions which affect protectiveness. Although the remediation goal for the Removal Action was to remediate the site to industrial standards, the residual risk from unrestricted use and unlimited exposure at the site falls within or below EPA's acceptable risk range. However,the Region has decided to do the following between now and the next five year review:

- Re-evaluate the risk assessment and site conditions further.
- Determine whether groundwater Institutional Controls remain necessary and whether Institutional Controls should be added to be ensure Site use remains industrial, or alternatively whether the site qualifies for unlimited use and unrestricted exposure.
- Document whatever decision is made in an Explanation of Significant Differences.

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2 Regional Screening Level (RSL) formerly Preliminary Remediation Goals are concentrations that correspond to 10-6 Risk and Hazard Quotient of 1. See http://www.epa.gov/region09/waste/sfund/prg/rsl-table.html.

X. Protectiveness Statement

The remedy remains protective of human health and the environment.

XI. Next Review

The next Five-Year Review will be conducted in the year 2013, within five years of the due date for this review, September 8, 2008.

Table 1: Comparison of the highest metal concentrations measured in the laydown area[1] during the RI to Regional Screening Levels

Contaminant	Highest Site Concentration (ppm)	PRG for 1 x 10^{-6} or HQ = 1 (ppm)
Chrome, assuming 1:6 ratio of chrome III to chrome IV	165	210
Copper	794	3,100
Nickel	1,930	1,600

1 The laydown area consists of the part of the property housing the plating building, parking lot, and back storage lot. This area was not remediated.

Figure 1 Site Location

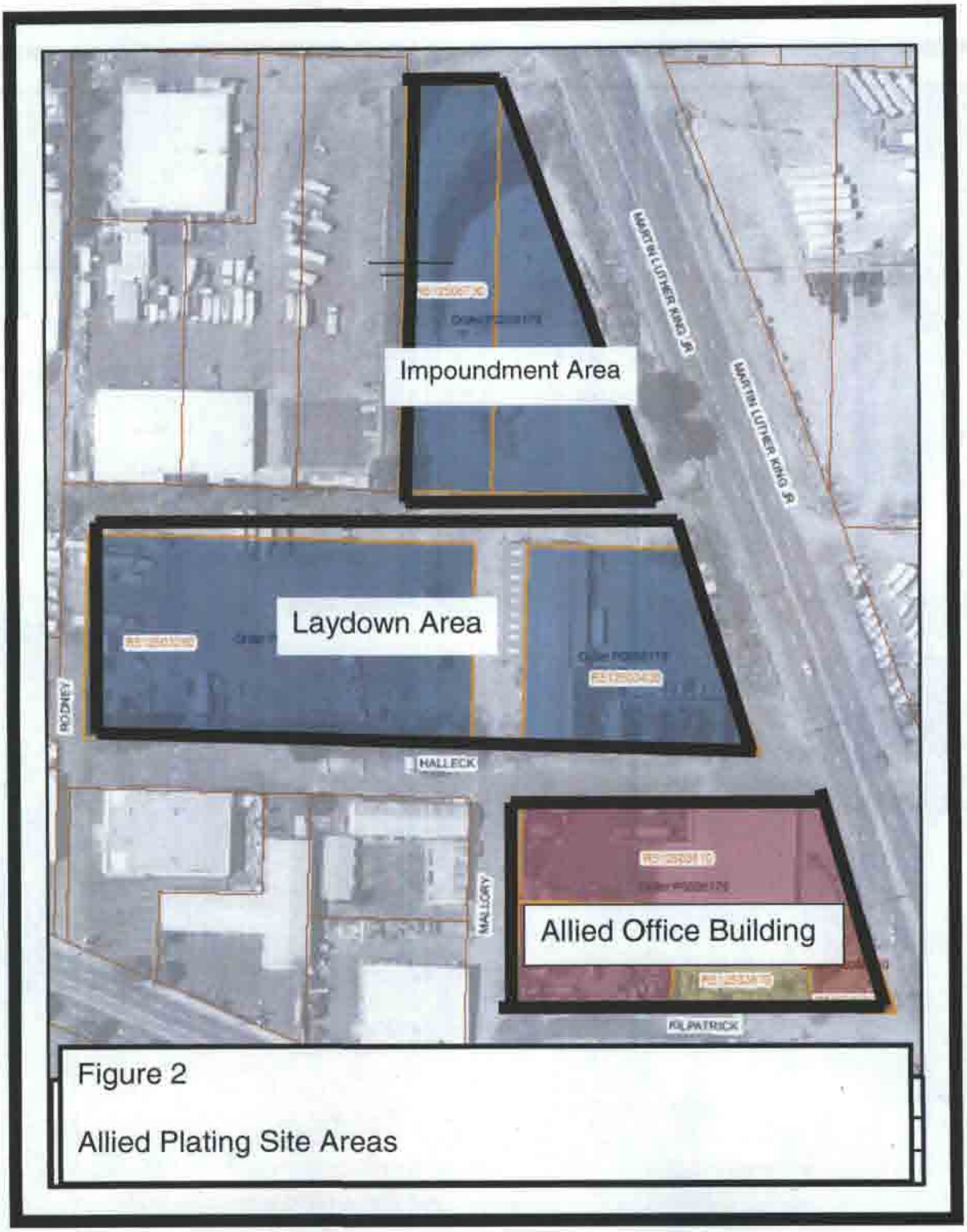

Figure 2

Allied Plating Site Areas

Figure 3

Property and Institutional Control Boundary